REMARKS

The Application has been carefully reviewed in light of the Office Action dated April 25, 2006. Claims 1 and 18 to 33 are in the application, of which Claims 1 and 26 are independent. Reconsideration and further examination are respectfully requested.

Replacement drawings are filed herewith, so as to insert a "PRIOR ART" legend into Figures 9 to 14. Withdrawal of the objection to these figures is respectfully requested.

Claims 1 to 3, 6, 8 to 11 and 14 were rejected under 35 U.S.C. § 102(e) over U.S. Patent 6,621,512 (Nakajima); Claims 4, 5, 12 and 13 were rejected under § 103(a) over Nakajima in view of U.S. Patent 6,928,100 (Sato)[1]; Claims 7 and 15 were rejected over Nakajima in view of U.S. Patent 5,774,248 (Komatsu); and Claims 16 and 17 were rejected over Nakajima in view of U.S. Patent Publication No. 2003/0173508 (Tanaka).

In response, Claims 2 through 17 have been cancelled, and independent Claim 1 has been amended so as to include the substance of some its dependent claims, such as Claim 7. In addition, new independent Claim 26 has been added substantially along the lines of original independent Claim 9 plus dependent Claim 15. Accordingly, this should be viewed as a traversal of the rejections, as detailed more fully below.

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[1] In view of the provisions of 35 U.S.C. § 103(c), the rejection over the U.S. patent to Sato is legally unsound. However, the U.S. patent to Sato has published counterparts, for example, at U.S. published application No. 2002/0075916, and those published counterparts are themselves available as prior art. Accordingly, the rejection over Sato has been treated on its technological merits.

Claim 1

Independent Claim 1 is directed to a laser emitter for holding plural laser elements, such as a laser emitter that might be used in a scanning optical element that deflects and scans light fluxes emitted from first and second laser elements, respectively, through use of a rotary polygon mirror that is shared in common by the first and second laser elements. In such a laser emitter, it is known to provide a grazing-incidence optical system in which optical axes of the first and second laser elements are slanted relative to each other, so that lights emitted from the first and second laser elements come close to each other. In this grazing-incidence optical system, when the first and second laser elements are just opposed to each in a sub-scanning direction, the grazing-incidence optical system has a technological advantage in which a rotary polygon mirror can be made thin, as compared with other types of optical systems. As a comparative example, in a parallel-incidence optical system, where lights from the laser elements enter the rotary polygon mirror in parallel with each other, the rotary polygon mirror is relatively thicker than that required for a grazing-incidence optical system.

In these known grazing-incidence optical systems, a first lens barrel portion and a second lens barrel portion that respectively hold the first and second laser elements, are formed as a unit in order to reduce the number of parts and also to improve an accuracy in positioning the laser elements.

Such grazing-incidence optical systems are also provided with collimator lenses and diaphragm portions, so as to shape the laser lights emitted from the laser elements into desired shapes. In a case where the diaphragm portions are provided on sides

of tips of the lens barrel portions with respect to the collimator lenses, the collimator lenses must be mounted on the inside sides of the diaphragm portions. This poses a problem, since it is difficult to mount the collimator lenses, and also to adjust the position of the collimator lenses.

It has also been considered to mount the collimator lenses on the lens barrel portions and to provide only the diaphragm portions separately from the unit. In this case, however, there is also a problem since it is difficult to narrow the laser lights, for the reason that the optical axes are slanted with each other so that a distance between the laser lights become small.

The invention of Claim 1 was made in recognition of these difficulties, and specifically recites the feature of a first lens supporting portion provided on a side of a tip of a first lens barrel portion with respect to a first diaphragm portion, so as to support a first collimator lens, as well as a second lens supporting portion provided on a side of a tip of a second lens barrel portion with respect to a second diaphragm portion, so as to support a second collimator lens. According to this feature, even in an arrangement in which the first and second lens barrel portions are integrally formed as one unit, the mounting of the collimator lenses and position adjustment thereof can be facilitated while the light fluxes transmitted from the respective lens barrel portions can be shaped into a more desirable shape of laser light.

In contrast with the foregoing, although Nakajima discloses a laser scanning device having an integral support for first and second laser light elements, Nakajima does not disclose diaphragm members provided in respective lens barrel portions for holding the

laser elements. Specifically, it is Applicant's understanding that Nakajima discloses a laser scanning device having a supporting member for integrally supporting a first laser element and a second laser element so that the lights therefrom are slanted relative to each other, and coupling lenses provided on a tip of the supporting members. Lights are emitted though these coupling lenses to a polygon mirror so that the lights are deflected and scanned. Nakajima provides for a diaphragm member, but the diaphragm member is separately provided outside the coupling lens for shaping a shape of the laser light.

Thus, Nakajima is not seen to disclose or to suggest the feature of a first lens supporting portion provided on a side of a tip of a first lens barrel portion with respect to a first diaphragm portion, so as to support a first collimator lens, or the feature of a second lens supporting portion provided on a side of a tip of a second lens barrel portion with respect to a second diaphragm portion, so as to support a second collimator lens.

Komatsu, which was applied in the rejection of original Claim 7, is not seen to supply the features missing from Nakajima. Komatsu discloses the shaping of a plurality of laser beams emitted from a multi-beam laser supported by a holder, through use of a diaphragm portion provided in the laser unit. Komatsu further discloses a collimator lens provided in a laser unit, wherein the laser beam is emitted though the collimator lens to a polygon mirror so that the laser beam is deflected and scanned.

However, Komatsu is not seen to disclose or to suggest a positional relationship between its collimator lens and its diaphragm portion. It is therefore not seen that Komatsu discloses the above-noted features which are also missing from Nakajima.

The remaining art applied against the claims has been reviewed, but no combination of such art is seen to disclose or suggest the technical feature of the invention whereby a first lens supporting portion is provided on a side of a tip of a first lens barrel portion with respect to a first diaphragm portion, so as to support a first collimator lens, and whereby a second lens supporting portion is provided on a side of a tip of a second lens barrel portion with respect to a second diaphragm portion, so as to support a second collimator lens. Thus, even in combination, the applied art cannot obtain the advantageous effect of the present invention, wherein in a unit in which the first and second lens barrel portions are provided integrally as one unit, the mounting of the collimator lenses and the position adjustment thereof can be facilitated while lens fluxes transmitted through a respective lens barrel portions can be shaped into desirable shapes for laser lights.

Accordingly, allowance of Claim 1 is respectfully requested.

Claim 26

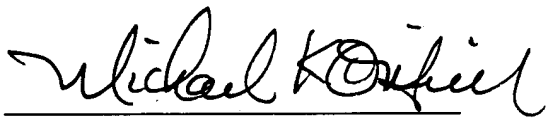
Independent Claim 26 is directed to a laser scanning device in which a rotary mirror is shared by first and second laser lights, for commonly scanning the laser lights. According to independent Claim 26, the laser lights are produced by first and second laser elements, which are respectfully held by first and second lens barrel portions. A first lens supporting portion is provided on a side of a tip of the first lens barrel portion with respect to a first diaphragm portion, so as to support a first collimator lens, and a second lens supporting portion is provided on a side of a tip of the second lens barrel portion with respect to a second diaphragm portion, so as to support a second collimator lens.

The art of record is not seen to disclose or to suggest the features of independent Claim 26, and allowance of this claim is respectfully requested.

CONCLUSION

Applicant's undersigned attorney may be reached in our Costa Mesa, California office by telephone at (714) 540-8700. All correspondence should be directed to our address given below.

Respectfully submitted,



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